

## Occupational Safety Competency 1.8

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**Competency 1.8** Occupational safety personnel shall demonstrate a familiarity level knowledge of the following disciplines that interface with occupational safety:

- Health Physics
- Industrial Hygiene
- Occupational Medicine
- Safeguards and Security
- Environmental Protection
- Nuclear Safety

### 1. Supporting Knowledge and Skills

- a. Discuss the applicability of occupational safety and health criteria contained in Department of Energy Orders on nuclear safety.
- b. Describe the potential impact of nuclear safety requirements on occupational safety matters and discuss the need for coordination between occupational safety professionals and health physicists.
- c. Discuss applicable “safety and analysis” and “review system criteria” for nuclear facilities.
- d. Discuss the fundamentals of industrial hygiene in terms of:
  - Basic terminology
  - Nature, recognition, evaluation and control of hazards
  - Necessary elements for implementing and maintaining an effective industrial hygiene program
- e. Discuss the relationship, and the need for coordination that exists, between the disciplines of: occupational safety; industrial safety; health physics; and, occupational medicine.
- f. Discuss the Department's occupational medicine program requirements and their applicability/interface with occupational safety program requirements.
- g. Discuss the general requirements of the Department's environmental protection program and describe how these requirements interface with the occupational safety program.
- h. Discuss the interface with, and the general requirements for, the Department's Safeguards and Security program.

## Occupational Safety Competency 1.8

---

- i. Discuss the interface that exists between occupational safety personnel and safeguards and security personnel, and why this interface is needed.

### 2. Self-Study Activities (corresponding to the intent of the above competency)

Below are two web sites containing many of the references you may need.

Web Sites		
Organization	Site Location	Notes
Department of Energy	<a href="http://wastenot.inel.gov/cted/stdguido.html">http://wastenot.inel.gov/cted/stdguido.html</a>	DOE Standards, Guides, and Orders
OSHA	<a href="http://www.osha-slc.gov/">http://www.osha-slc.gov/</a>	OSHA documents and search engine
U.S. House of Representatives	<a href="http://law.house.gov/cfr.htm">http://law.house.gov/cfr.htm</a>	Searchable Code of Federal Regulations

**Read** paragraph 5. of DOE 5480.1B, *Environment, Safety, and Health (ES&H) Program for Department of Energy Operations*, and paragraph 8. of DOE 5480.5, *Safety of Nuclear Facilities*.

- EXERCISE 1.8-A Referring to paragraph 5.d. of DOE 5480.1B, *Environment, Safety, and Health (ES&H) Program for Department of Energy Operations*, what are the functional disciplines or areas that typically comprise ES&H activities at a nuclear facility?
- EXERCISE 1.8-B Referring to paragraph 8.f. of DOE 5480.5, *Safety of Nuclear Facilities*, what nuclear facility activities are covered under ES&H codes, standards, and guides?
- EXERCISE 1.8-C Referring to paragraph 8.a. of DOE 5480.5, *Safety of Nuclear Facilities*, what specific process is the basis for the identification and control of risks?

**Read** the Summary section of this study guide and Chapter 1 of *Fundamentals of Industrial Hygiene* (or introductory sections of any other similar textbook).

- EXERCISE 1.8-D Referring to *Fundamentals of Industrial Hygiene* (or any other comparable text), list three disciplines that constitute the typical industrial hygiene/occupational health program.

## Occupational Safety Competency 1.8

---

**Scan** paragraphs 1 through 7.a. of DOE 5480.8A, *Contractor Occupational Medical Program*.

EXERCISE 1.8-E Referring to paragraph 7.a. of DOE 5480.8A, *Contractor Occupational Medical Program*, what is the frequency and the basis that occupational medical physicians must visit each contractor installation?

EXERCISE 1.8-F Referring to paragraph 7.a. of DOE 5480.8A, *Contractor Occupational Medical Program*, how often are DOE and its contractors required to offer all employees a comprehensive health examination?

**Scan** paragraphs 7 and 8 of DOE 5630.11B, *Safeguards and Security Program*.

EXERCISE 1.8-G Referring to paragraph 8.k. of DOE 5630.11B, *Safeguards and Security Program*, what action must the head of the field element take if operations would result in unacceptable risk to national security or the health and safety of employees?

EXERCISE 1.8-H Referring to paragraph 9 of DOE 5630.11B, *Safeguards and Security Program*, what are some of the actions that may cause “. . .unacceptable risk to national security or the health and safety of DOE and contractor employees. . .?”

EXERCISE 1.8-I How do occupational safety personnel get involved in safeguards and security issues?

**Scan** paragraphs 3, 4, and 8 and Attachments 1 and 2 of DOE 5480.4, *Environmental Protection, Safety, and Health Protection Standards*.

EXERCISE 1.8-J Referring to Attachments 1 and 2 of DOE 5480.4, list at least three of the general categories of mandatory ES&H standards (that encompass DOE and non-DOE federal ES&H statutes and/or requirements).

### 3. Summary

The industrial hygienist is involved with the monitoring and analytical methods required to detect the extent of exposure, and the engineering and other methods used for hazard control. Evaluation of the magnitude of the environmental factors and stresses arising in or from the workplace is done by the industrial hygienist, aided by training, experience, and quantitative measurement of the chemical, physical, ergonomic, or biological stresses.

## Occupational Safety Competency 1.8

---

An effective industrial hygiene program would consist of the application of knowledge to the anticipation and recognition of health hazards arising out of work operations and processes, evaluation, and measurement of the magnitude of the hazard.

Occupational health hazards are: 1) conditions that cause legally compensable illnesses, or 2) any conditions in the workplace that impair the health of employees enough to make them lose time from work or to cause significant discomfort.

The occupational health program requires the services of the professional disciplines of the occupational physician, the occupational nurse, and the industrial hygienist, each supported by ancillary safety and health professionals, including industrial toxicologists and health physicists.

### 4. Exercise Solutions

EXERCISE 1.8-A Referring to paragraph 5.d. of DOE 5480.1B, *Environment, Safety, and Health (ES&H) Program for Department of Energy Operations*, what are the functional disciplines or areas that typically comprise ES&H activities at a nuclear facility?

ANSWER 1.8-A Environmental protection, occupational safety, fire protection, industrial hygiene, health physics, occupational medicine, process and facilities safety, nuclear safety, emergency preparedness, quality assurance, and radioactive and hazardous waste management.

EXERCISE 1.8-B Referring to paragraph 8.f. of DOE 5480.5, *Safety of Nuclear Facilities*, what nuclear facility activities are covered under ES&H codes, standards, and guides?

ANSWER 1.8-B Siting, design, construction, modification, operation, maintenance, deactivation, decontamination, and decommissioning.

EXERCISE 1.8-C Referring to paragraph 8.a. of DOE 5480.5, *Safety of Nuclear Facilities*, what specific process is the basis for the identification and control of risks?

ANSWER 1.8-C Safety analysis and review.

## Occupational Safety Competency 1.8

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EXERCISE 1.8-D Referring to *Fundamentals of Industrial Hygiene* (or any other comparable text), list three disciplines that constitute the typical industrial hygiene/occupational health program.

ANSWER 1.8-D The *occupational physician*, the *occupational nurse*, and the *industrial hygienist*, each supported by ancillary safety and health professionals, including industrial toxicologists and health physicists.

EXERCISE 1.8-E Referring to paragraph 7.a. of DOE 5480.8A, *Contractor Occupational Medical Program*, what is the frequency and the basis that occupational medical physicians must visit each contractor installation?

ANSWER 1.8-E They must make periodic visits based on plant and workforce size; number of different operations; kinds of physical, chemical, or biological agents used; accident and incident rate; occupational illness and disability rate; and occupational medical department staffing level.

EXERCISE 1.8-F Referring to paragraph 7.a. of DOE 5480.8A, *Contractor Occupational Medical Program*, how often are DOE and its contractors required to offer all employees a comprehensive health examination?

ANSWER 1.8-F Annually for employees over age 45, and biennially for all others.

EXERCISE 1.8-G Referring to paragraph 8.k. of DOE 5630.11B, *Safeguards and Security Program*, what action must the head of the field element take if operations would result in unacceptable risk to national security or the health and safety of employees?

ANSWER 1.8-G “Take such action as may be appropriate to ensure acceptable safeguards and security, including curtailment or suspension of operations ...”

## Occupational Safety Competency 1.8

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EXERCISE 1.8-H Referring to paragraph 9 of DOE 5630.11B, *Safeguards and Security Program*, what are some of the actions that may cause “. . . unacceptable risk to national security or the health and safety of DOE and contractor employees. . .?”

ANSWER 1.8-H Loss or theft of classified matter or government property and acts of unauthorized access, theft, diversion, sabotage, espionage, or other hostile acts.

EXERCISE 1.8-I How do occupational safety personnel get involved in safeguards and security issues?

ANSWER 1.8-I Being responsible for the safety and health of site personnel, they may be able to recognize risks to the health and safety of site personnel; they also may support the safeguards and security staff in defining predetermined risks.

EXERCISE 1.8-J Referring to Attachments 1 and 2 of DOE 5480.4, list at least three of the general categories of mandatory ES&H standards (that encompass DOE and non-DOE federal ES&H statutes and/or requirements).

ANSWER 1.8-J (Any three of the following)

1. Environmental protection
2. Fire protection
3. Occupational health protection
4. Occupational safety
5. Nuclear safety
6. Transportation safety